EARTHQUAKE READY BURNSIDE BRIDGE

# Stakeholder Representative Group Meeting

Department of Community Services
Transportation Division

July 27, 2017

# Agenda

1. Introductions
2. Project Update
3. Screening Process
4. Screening Results
5. Schedule Review
6. Closing Remarks

# 2. Project Update

## Key Activities

# 2. Project Update

## Stakeholder Outreach – Key Activities


- Committee Meetings
  - SRG #1 – April 17, 2017
  - SASG #2 – July 14, 2017
- Briefings
  - Kerns Neighborhood Assoc., March 15, 2017
  - MultCo Bike Ped Committee, April 12, 2017
  - Buckman Neighborhood Assoc., April 13, 2017
  - Port of Portland, July 6, 2017
  - USACE, July 11, 2017
- Equity & Diversity Outreach
  - Briefings vs. workshops
  - Bridgetown Night Strike, July 11, 2017
  - VOZ, July 21, 2017

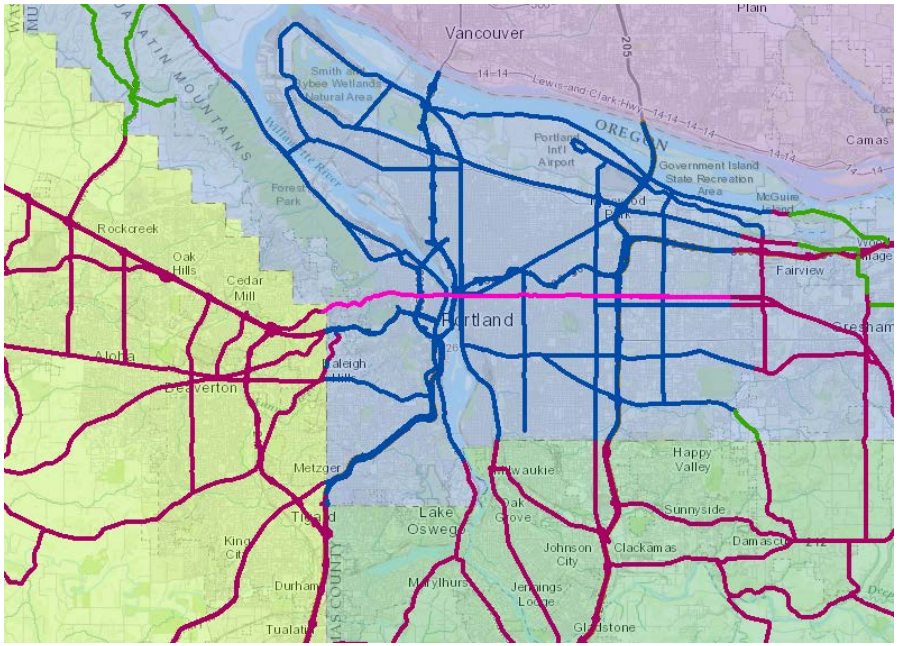
# 2. Project Update

## Technical Community – Key Activities


- Emergency Management Roundtable, June 14th, 2017
- Seismic Resiliency Committee Meeting, June 20th, 2017
  - Seismic Design Criteria
  - Technical Design Guidance

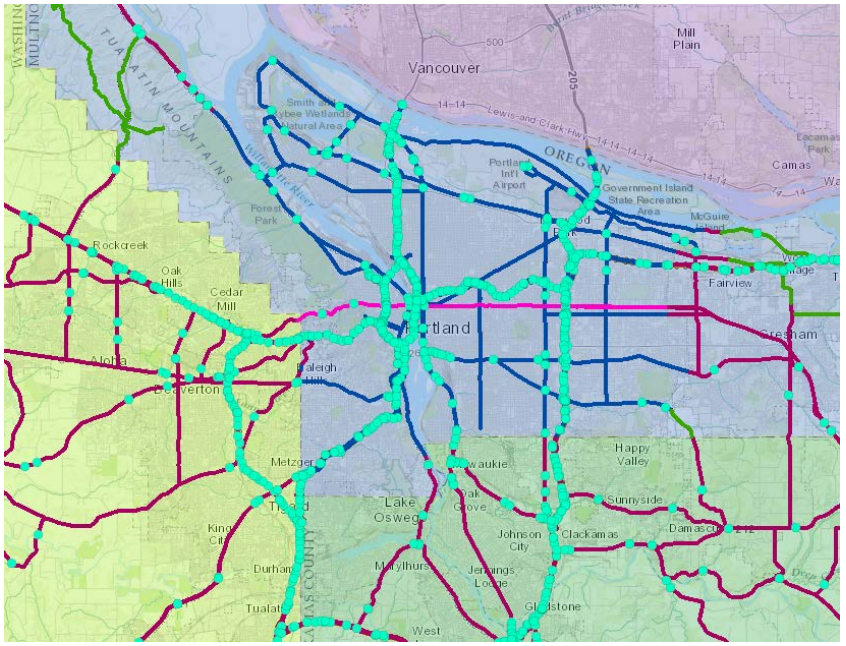
# 2. Project Update

## Technical Community – Emergency Management Round Table




***All Regional Emergency Transportation Routes (ETRs)***

*Last updated 2005*




***All bridges located on or over Regional ETRs***

### Key Finding #1

- Assumptions have been made about the availability of transportation routes after a major earthquake

# 2. Project Update

## Technical Community – Emergency Management Round Table


TRIMET

Metro

CLACKAMAS COUNTY

READINESS. RESPONSE. RECOVERY.
PBEM
PORTLAND BUREAU OF EMERGENCY MANAGEMENT

STATE OF OREGON 1859

Multnomah County
Emergency Management

### Key Finding #2

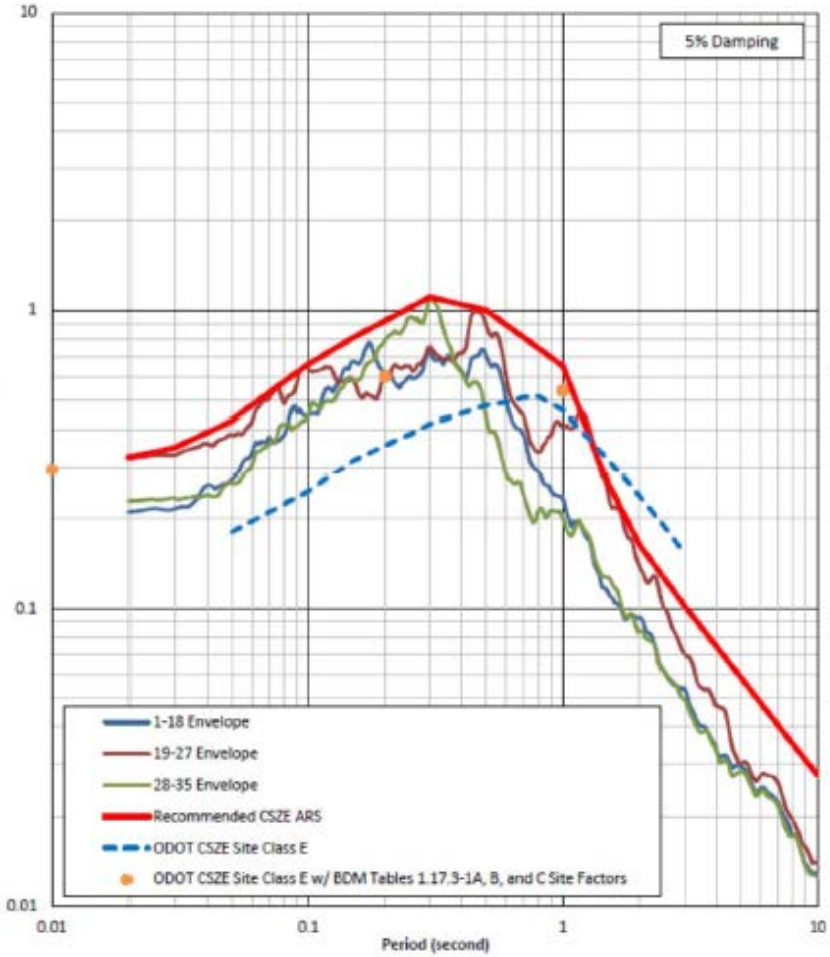
- Agencies working towards the same goal
  - Transportation Recovery Plan (PBEM)
  - Debris Management Plan (Metro)
  - URM Seismic Retrofit Project (PBEM)

### Key Finding #3

- Many opportunities to coordinate moving forward

# 2. Project Update

## Technical Community – Seismic Resiliency Committee




***Custom Burnside Response Spectrum***
*Cascadia Subduction Zone Earthquake*

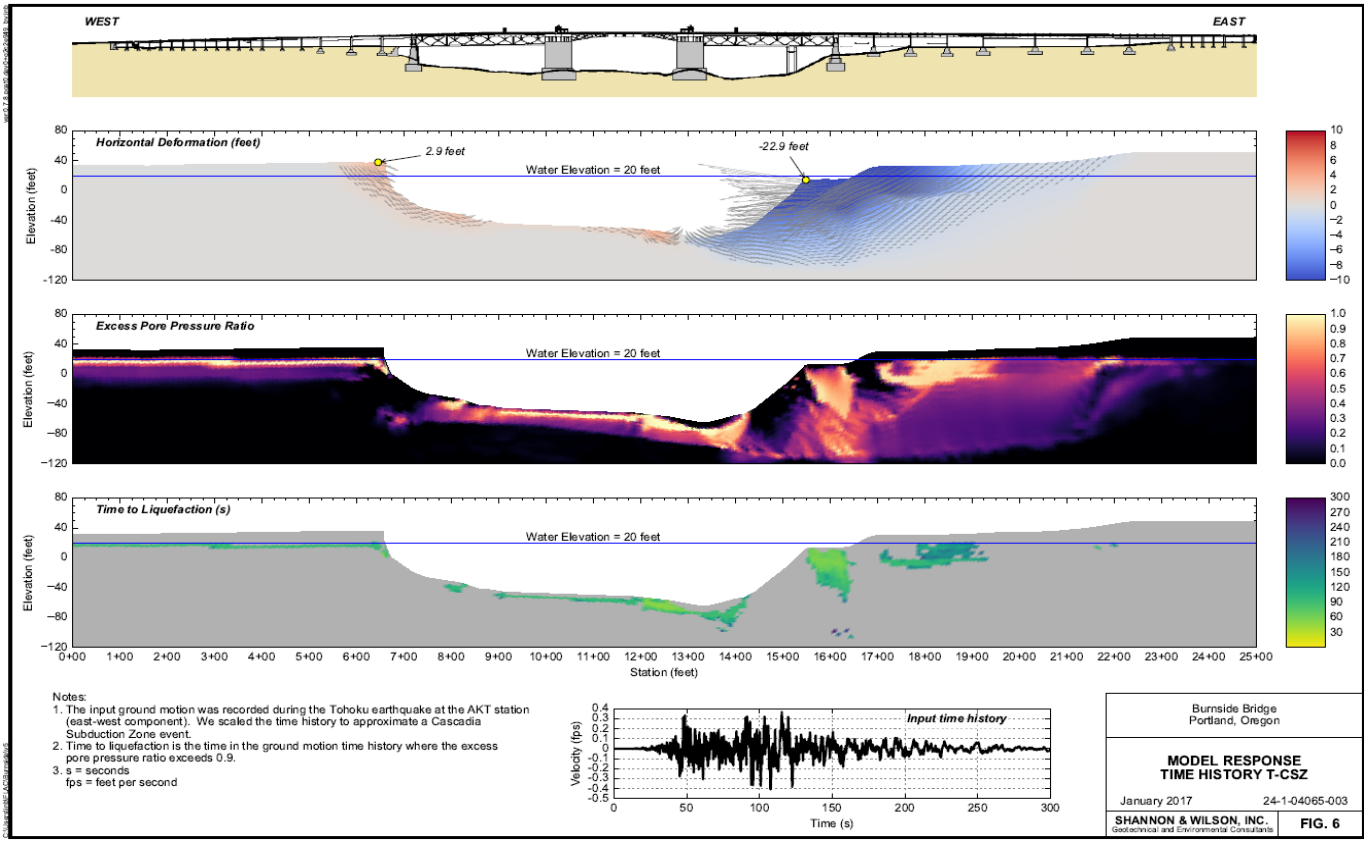
### Key Performance Criteria

➢ **Examples:**

- What does the earthquake look like?
- What heavy haul or specialty vehicles will need to use the bridge?
- When will the bridge be operable following an earthquake?
- What assumptions are being made about crossing design features (height, width, elevation, etc.) ?

# 2. Project Update

## Technical Community – Seismic Resiliency Committee

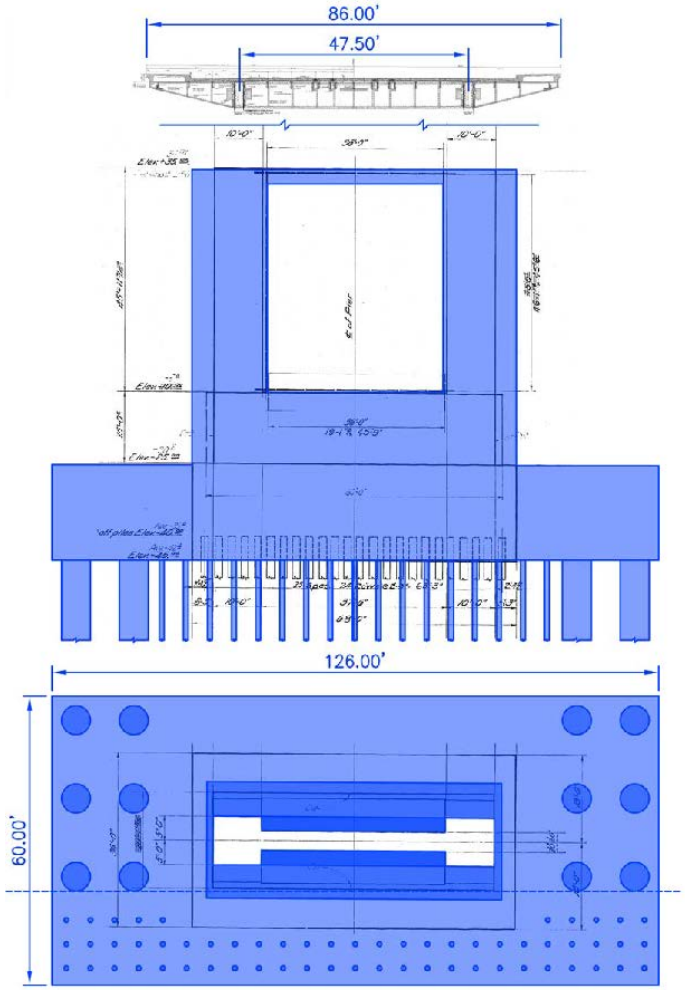



### ➢ Key Finding #1

- What does the soil look like?
- How bad is the liquefaction?
- How much would it cost to fix it?

# 2. Project Update

## Technical Community – Seismic Resiliency Committee



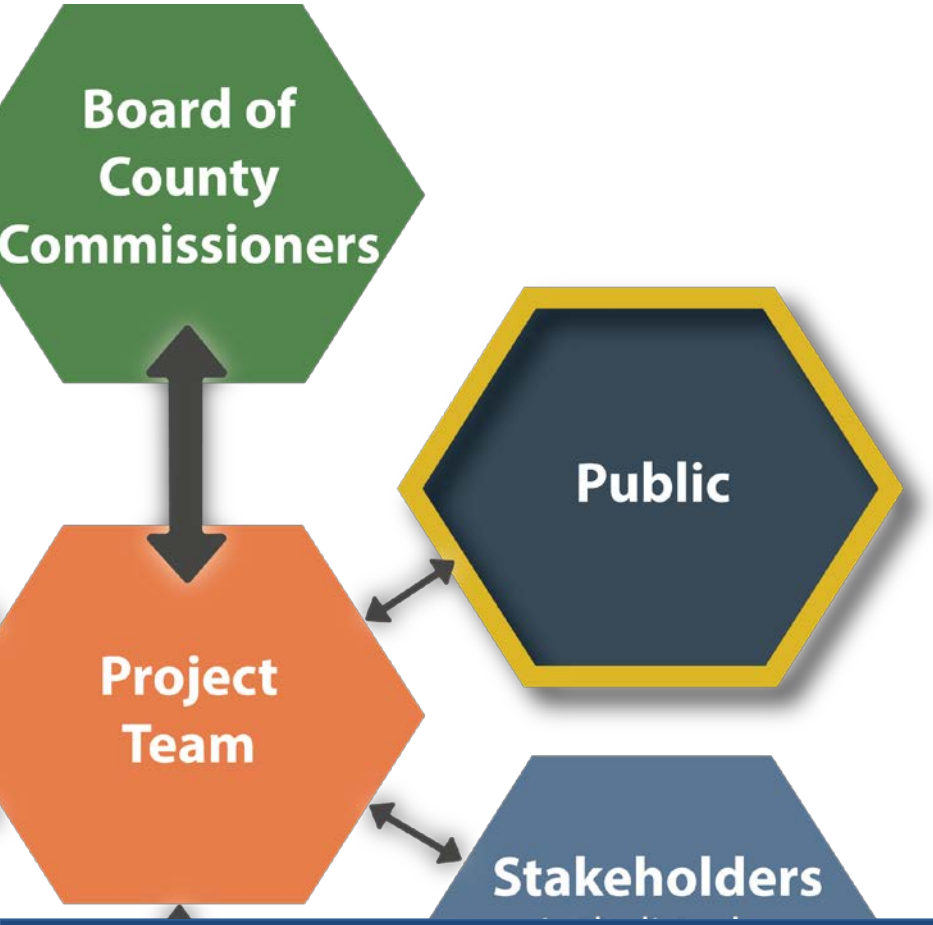

- **Key Finding #2 – A Different Look**
  - Enlarged members
    - Widened and thickened piers
    - Enlarged footings
    - Additional deep foundation members

# 2. Project Update

## Key Activities

# 2. Project Update

## Key Activities – Public Outreach




- **Outreach**
  - Website, social media
  - Videos
  - Survey

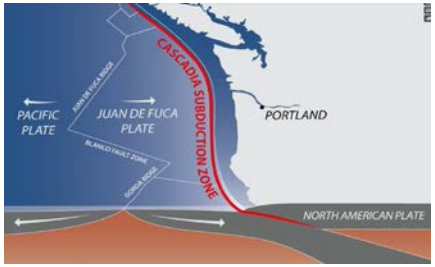
# 2. Project Update

## Key Activities – Public Outreach

### Website/Videos


Project Overview -Teaser

Lifeline




Earthquake

Emergency Response


Simulation

# 2. Project Update

## Key Activities – Public Outreach

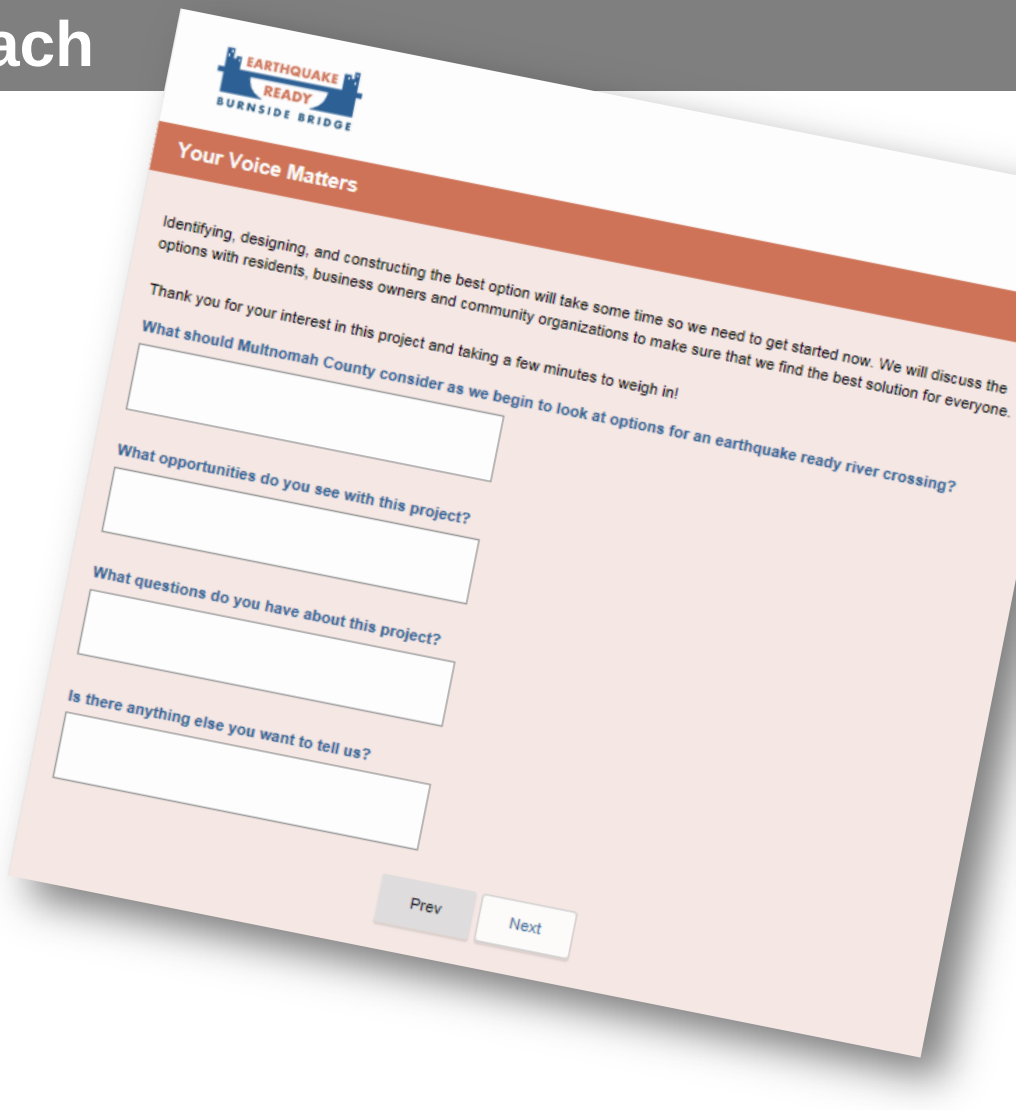
### Survey


# 2. Project Update

## Key Activities – Public Outreach

### Survey

- What should Multnomah County consider as we begin to look at options for an earthquake ready river crossing?
- What opportunities do you see with this project?
- What questions do you have about this project?
- Is there anything else you want to tell us?



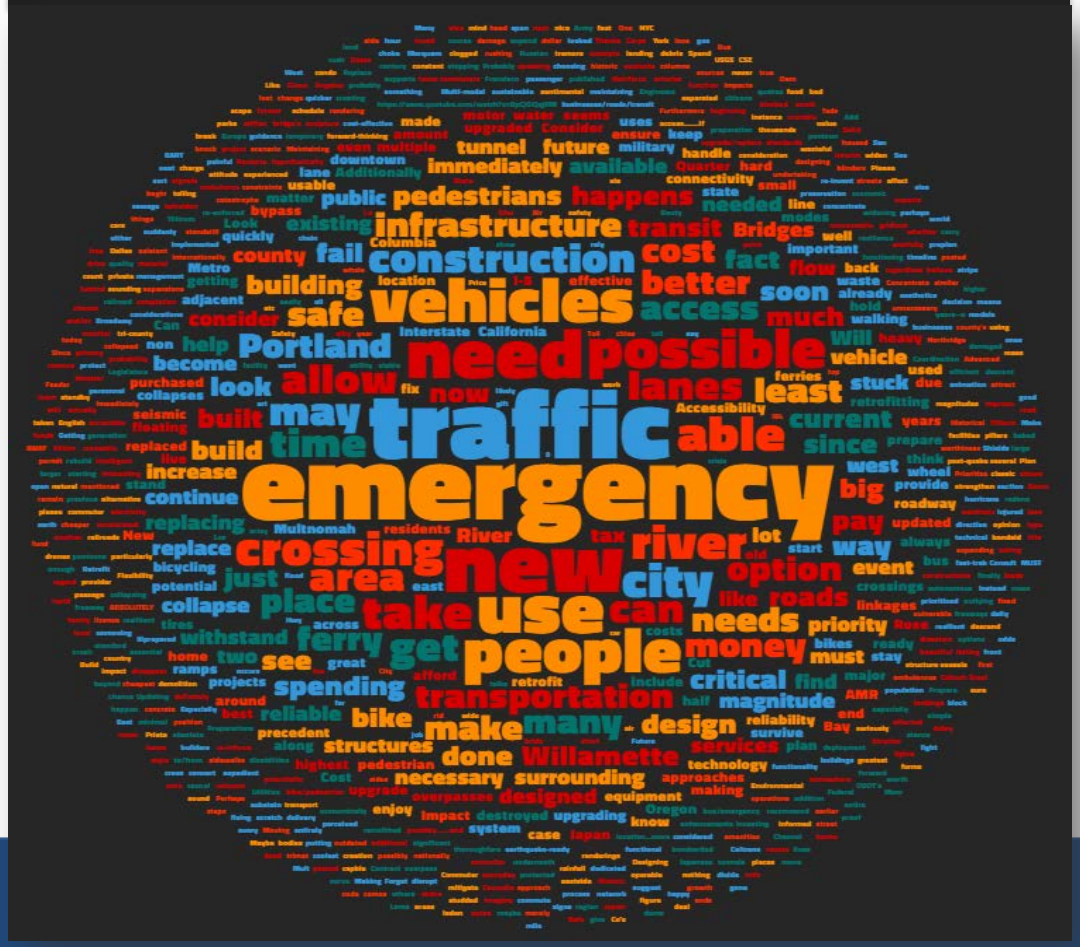
# 2. Project Update

## Key Activities – Public Outreach

### Survey

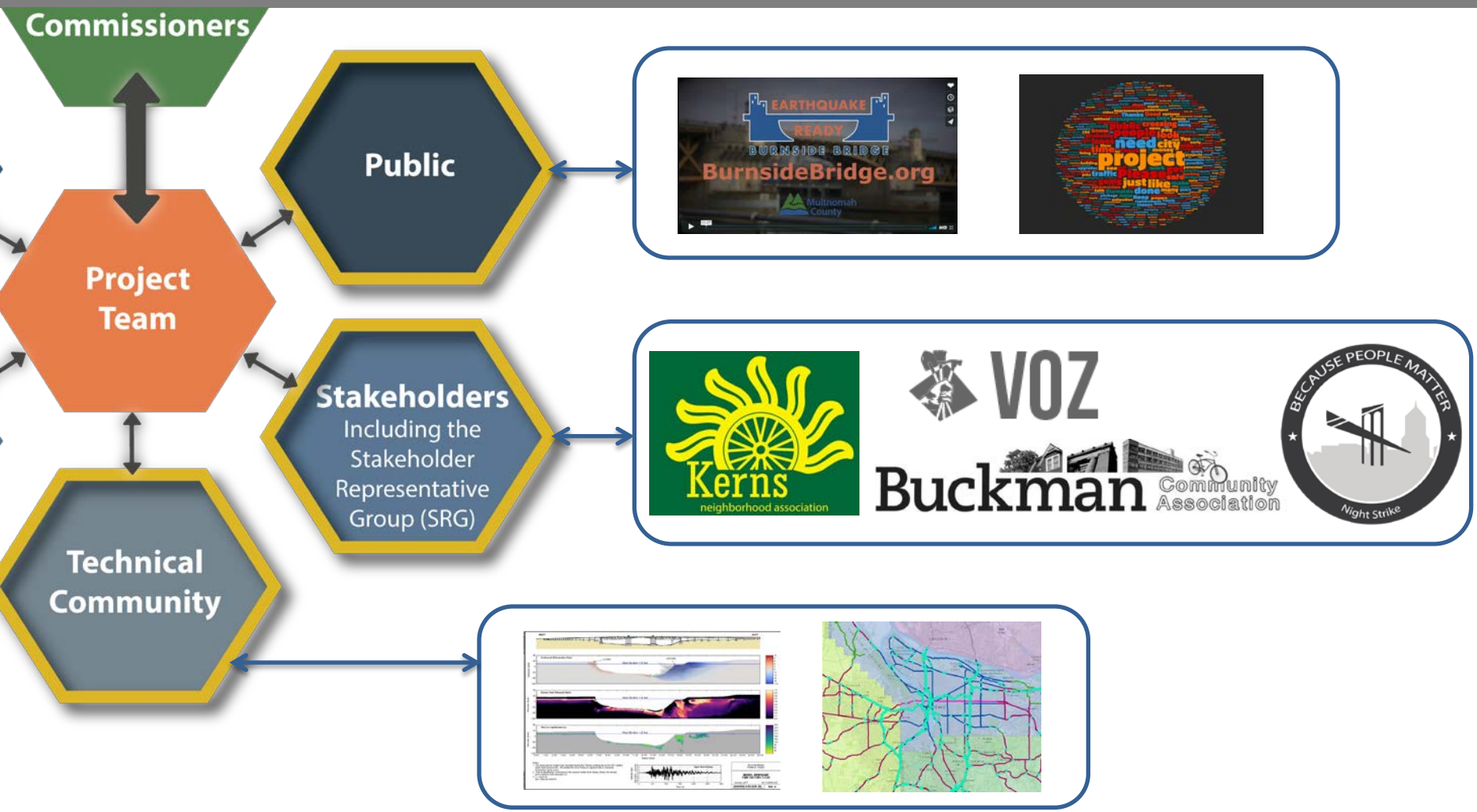
*Emerging Themes Sneak Peek*

**What should Multnomah County consider as we begin to look at options for an earthquake ready river crossing?**



# 2. Project Update

## Discussion Break



# 3. Screening Results

## Screening Process

# 3. Screening Results

## Screening Process – Pass/Fail Criteria


**PASS/FAIL**

- Major Infrastructure Compatibility
- Seismic Resiliency
- Emergency Response

# 3. Screening Results

## Pass/Fail Criteria – Major Infrastructure Compatibility


**FAIL =**

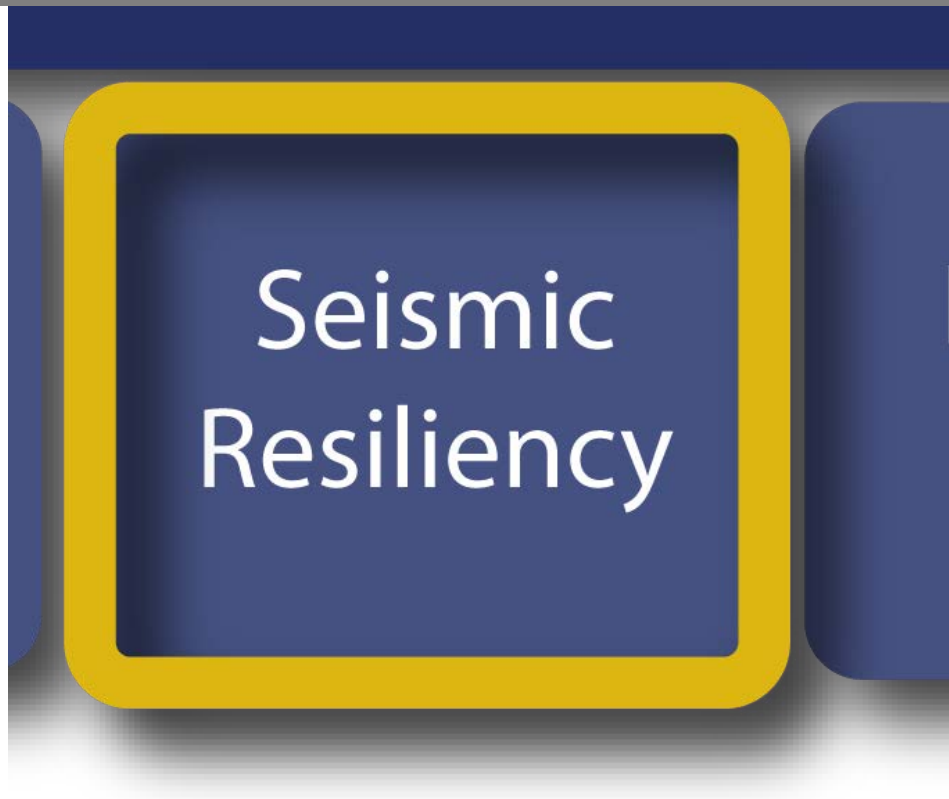
Causes prolonged, substantial interruption or degradation of the use or function of other major infrastructure

# 3. Screening Results

## Pass/Fail Criteria – Seismic Resiliency


**FAIL =**

The crossing option does not fully comply with the Seismic Design Criteria



# 3. Screening Results

## Pass/Fail Criteria – Emergency Response



**FAIL (any of the following) =**

- The route from the lifeline to the crossing:
  - Has two or more blockage locations, including seismically vulnerable bridges
  - Is more than 2 miles of out of direction travel
- The crossing option has two or fewer travel lanes usable by emergency vehicles

# 3. Screening Results

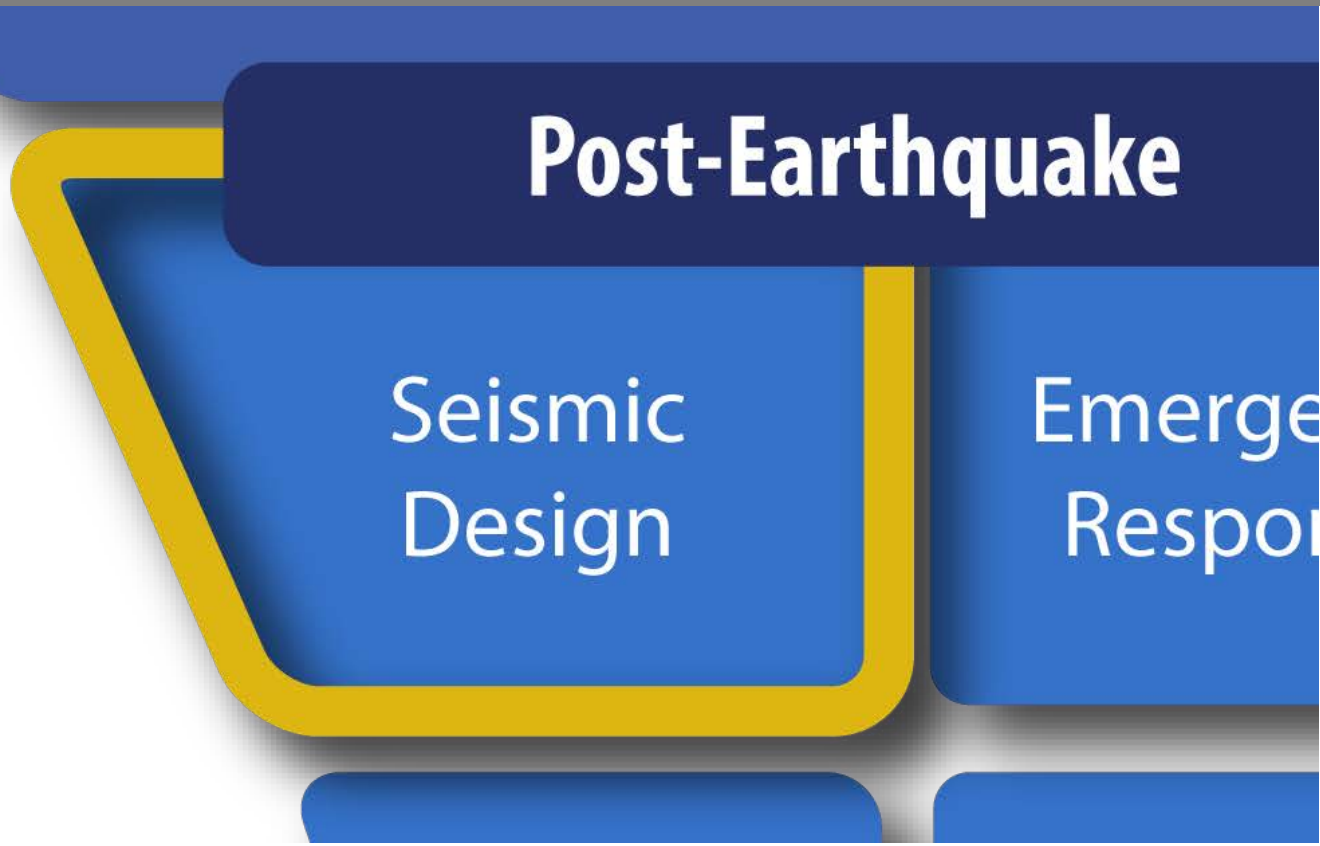
## Scoring Criteria



| Rating |
| --- |
| 1 = Poor |
| 3 = Fair |
| 5 = Good |

# 3. Screening Results

## Scoring Criteria – Seismic Design


| Rating |
|---|
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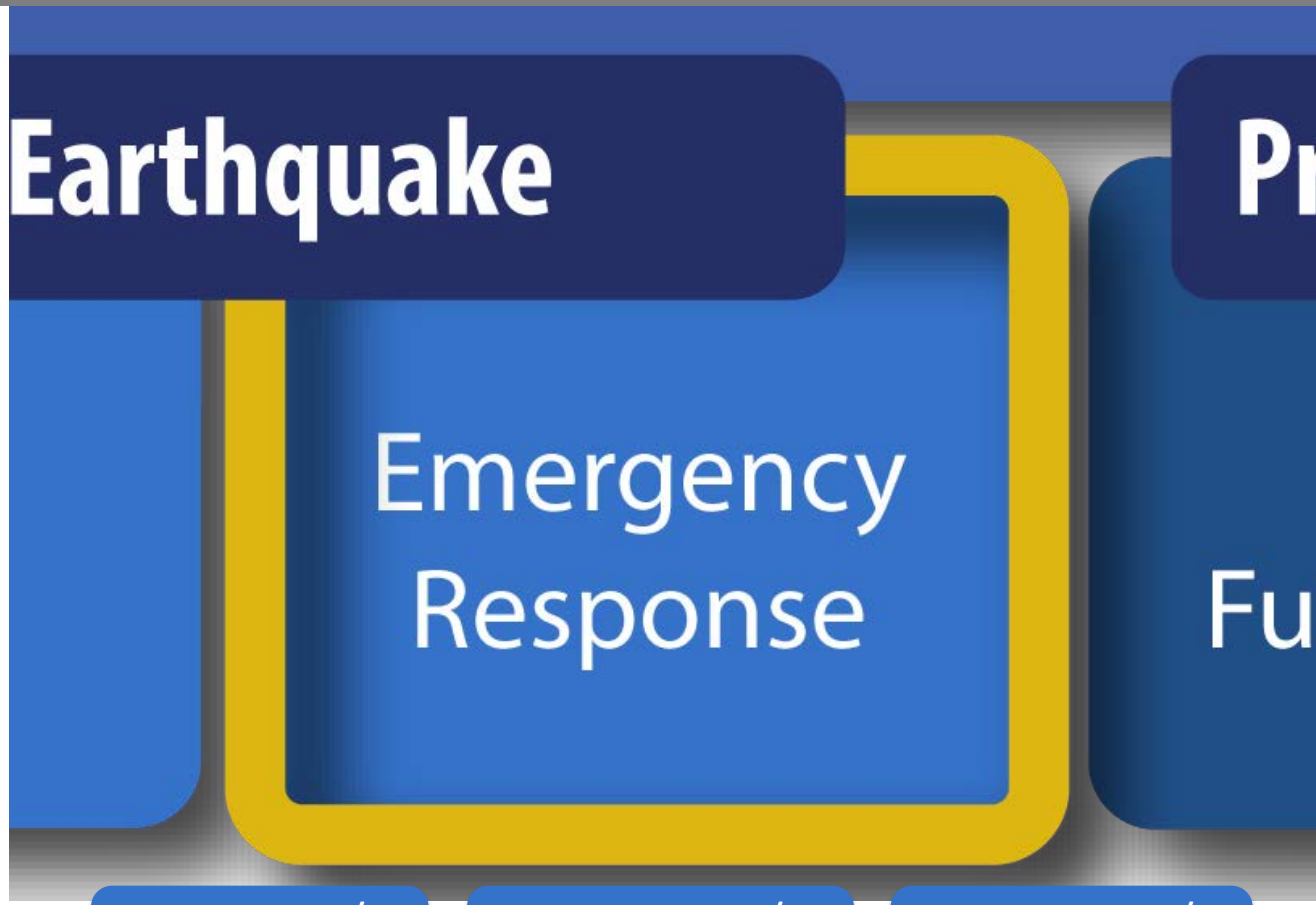
# 3. Screening Results

## Scoring Criteria – Emergency Response


| Rating |
|---|
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| 3 = Fair |
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# 3. Screening Results

## Scoring Criteria – Emergency Function


**Emergency Function**

- A. ADA
- B. Bike / Ped
- C. Motor Vehicle
- D. River Users

| Rating |
|---|
| 1 = Poor |
| 3 = Fair |
| 5 = Good |

# 3. Screening Results

## Scoring Criteria – Emergency Plan Consistency



| Rating |
| --- |
| 1 = Poor |
| 3 = Fair |
| 5 = Good |

# 3. Screening Results

## Scoring Criteria – Everyday Function



| Rating |
| --- |
| 1 = Poor |
| 3 = Fair |
| 5 = Good |

# 3. Screening Results

## Scoring Criteria – Ease of Maintenance



| Rating |
| --- |
| 1 = Poor |
| 3 = Fair |
| 5 = Good |

# 3. Screening Results

## Sample Calculation

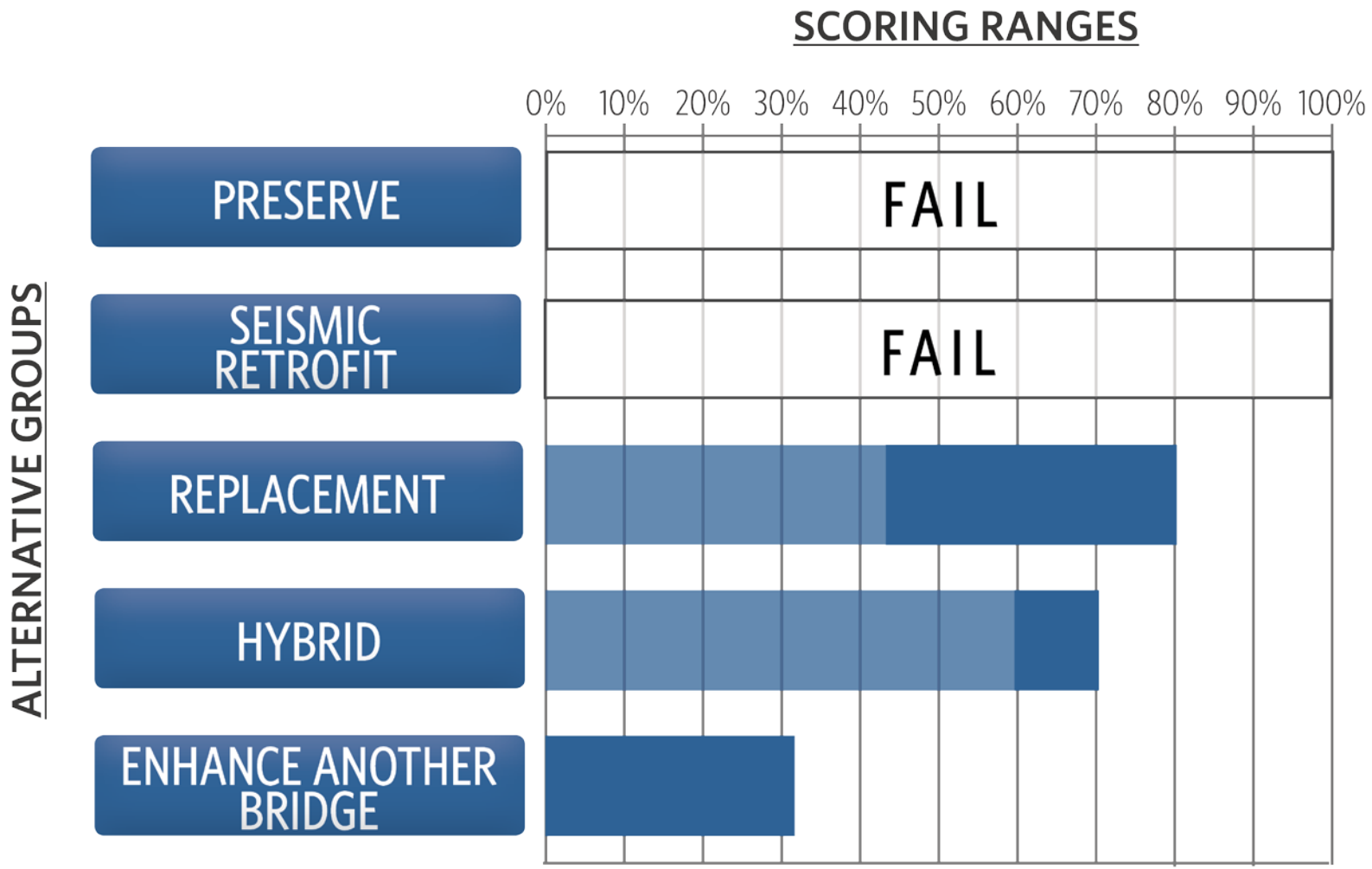
| | Screening - Rating Factors | | | | | | | | | | | Ratings | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Seismic | Emergency Service | | | Emergency Function | | | | Emrg. Plan | Pre-EQ Function | | | |
| Alternative | 1 Seismic | 2a Access | 2b Distance | 2c Capacity/ Congestion | 3a ADA | 3b Bike / Ped | 3c Motor Vehicle | 3d River Users | 4 Plan Consistency | 5a Preventative Maintenance | 5b Routine Functionality | Wtd | Wtd Normalized |
| In-kind, Low Movable Replacement | 3 | 5 | 5 | 5 | 5 | 5 | 3 | 3 | 5 | 3 | 5 | | |
| *weighted scores* | *60.0* | *33.3* | *33.3* | *33.3* | *25.0* | *25.0* | *15.0* | *15.0* | *100.0* | *30.0* | *50.0* | *420.0* | ***80%*** |

## Calculation Sheet Description

1. Alternative ID
2. Screening Numerical Criteria Ratings
   - 1 = Poor
   - 3 = Fair
   - 5 = Good
3. Criteria Equally Weighted
4. Ratings Distributed by % of Total Available Score

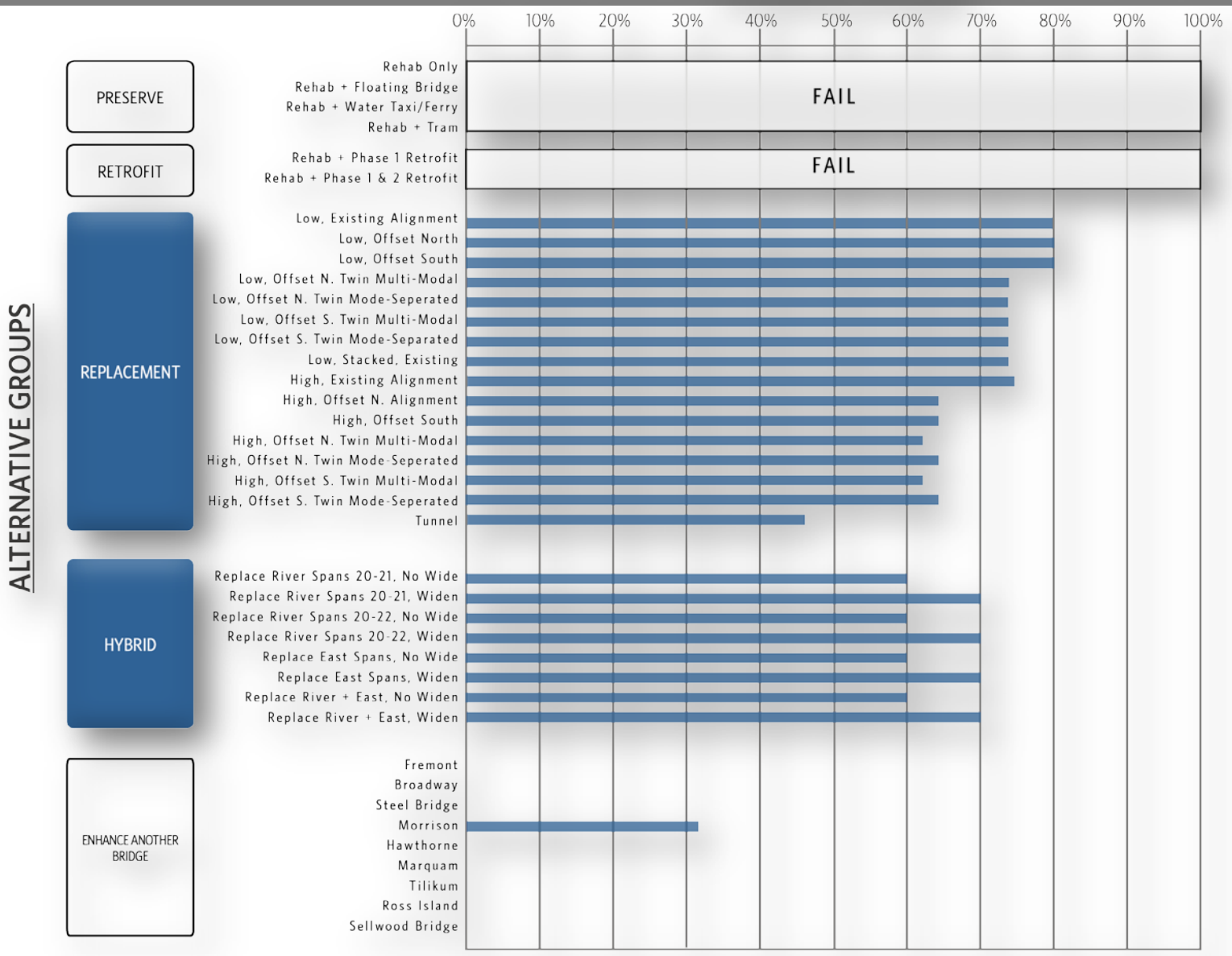
# 3. Screening Results

## Alternative Groupings



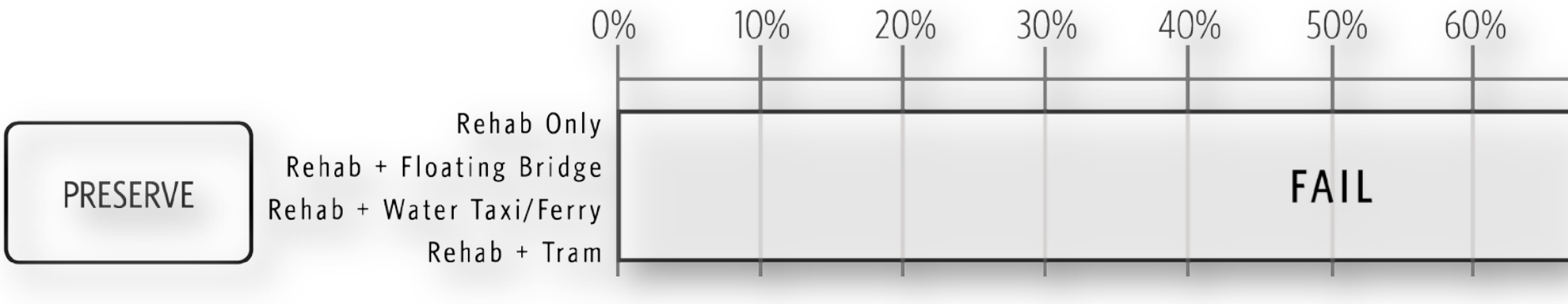
# 3. Screening Results

## Alternative Groupings Results



# 3. Screening Results

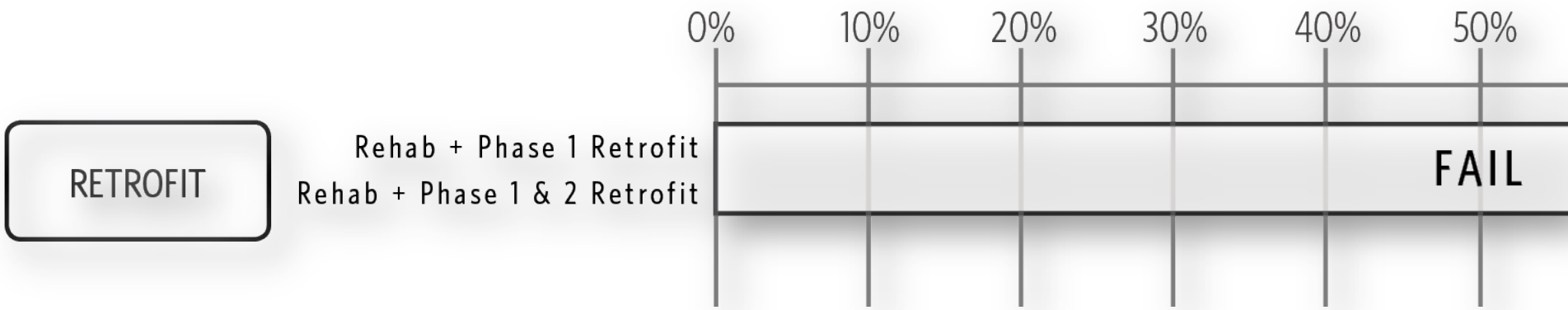
## Alternative Grouping – Preserve




- All 'Preserve' alternatives failed the Pass/Fail criteria
  - **Preservation (No Build):** Did not meet seismic standards
  - **Preservation (+ Misc.):** Did not satisfy immediate Emergency Service requirements

# 3. Screening Results

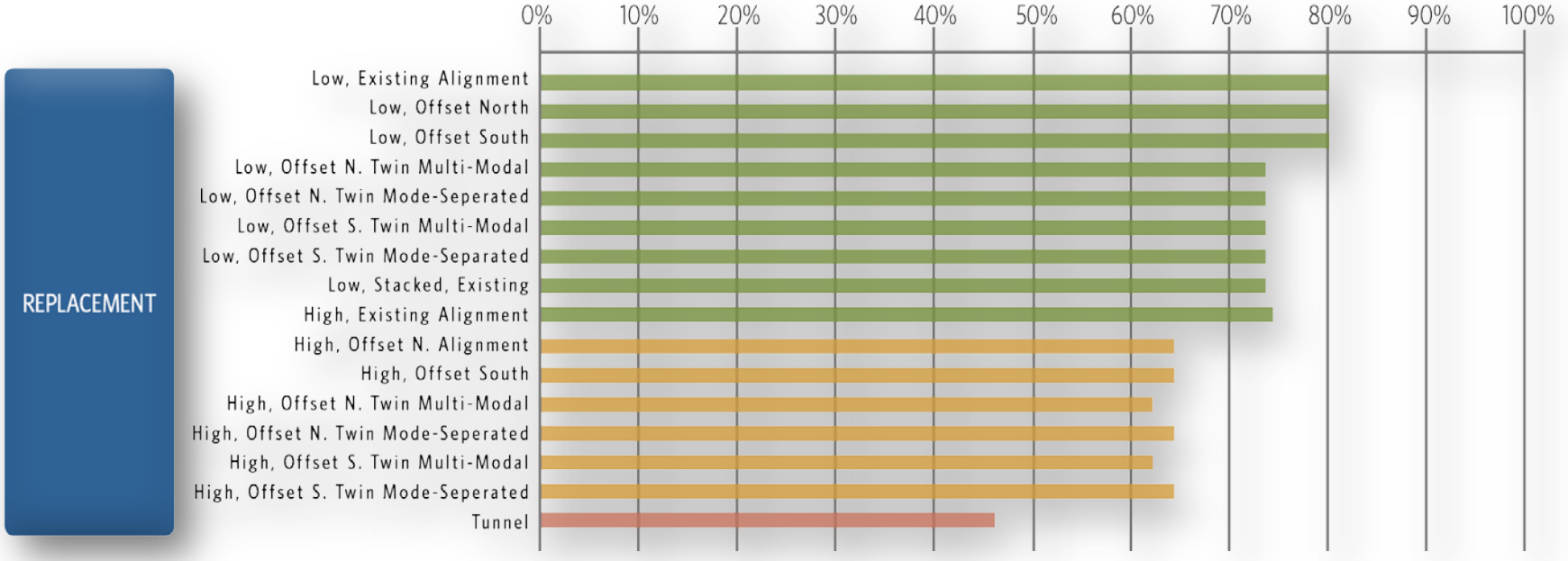
## Alternative Grouping – Seismic Retrofit




- All 'Retrofit' alternatives failed the Pass/Fail criteria
  - **Pure Seismic Retrofit:** Could not be constructed to avoid long-term disruptions to I-5

# 3. Screening Results

## Alternative Grouping – Replacement

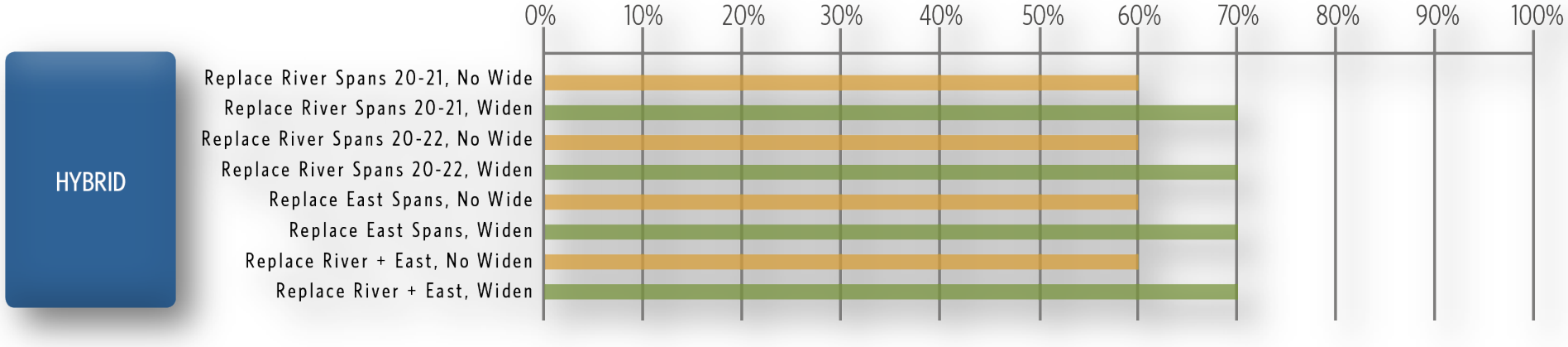



➢All 'Replacement' alternatives pass

- **Low-elevation Movable:** Scored high for most criteria
- **High-elevation Fixed:** Scored in middle due to more bike / pedestrian impacts vs low-elevation
- **Tunnel:** Scored lowest due to impacts to bike / pedestrian, challenges for connectivity, and less ideal post-EQ recovery accessibility vs other alternatives

# 3. Screening Results

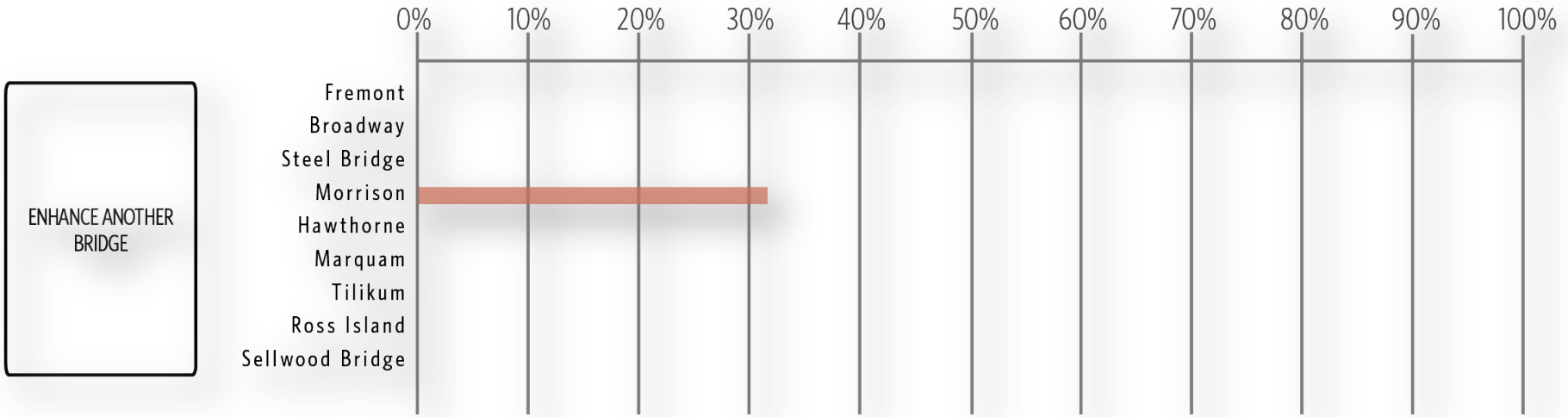
## Alternative Grouping – Hybrid




- All 'Hybrid' alternatives pass despite reliance on aging materials
  - **Hybrid:** Reliance on many existing structural elements reduced the seismic score compared to replacement alternatives

# 3. Screening Results

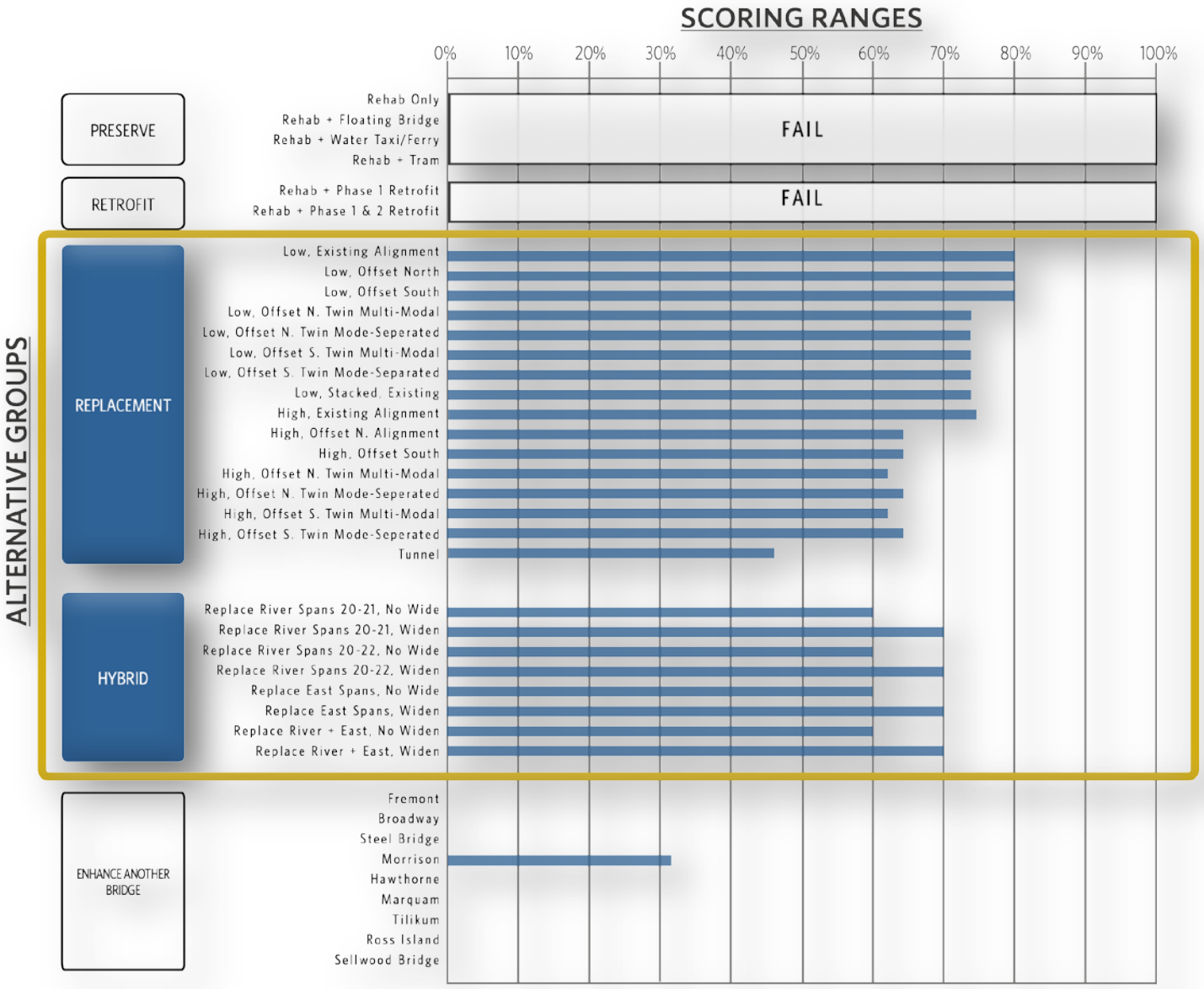
## Alternative Grouping – Enhance Another Bridge




- All alternatives except Morrison Bridge failed the Pass/Fail criteria
  - **All except Morrison:** Long detour routes, multiple obstructions, and/or narrow bridges resulted in FAIL
  - **Morrison Bridge:** Has the lowest score of all rated alternatives

# 3. Screening Results

## Key Findings and Recommendations

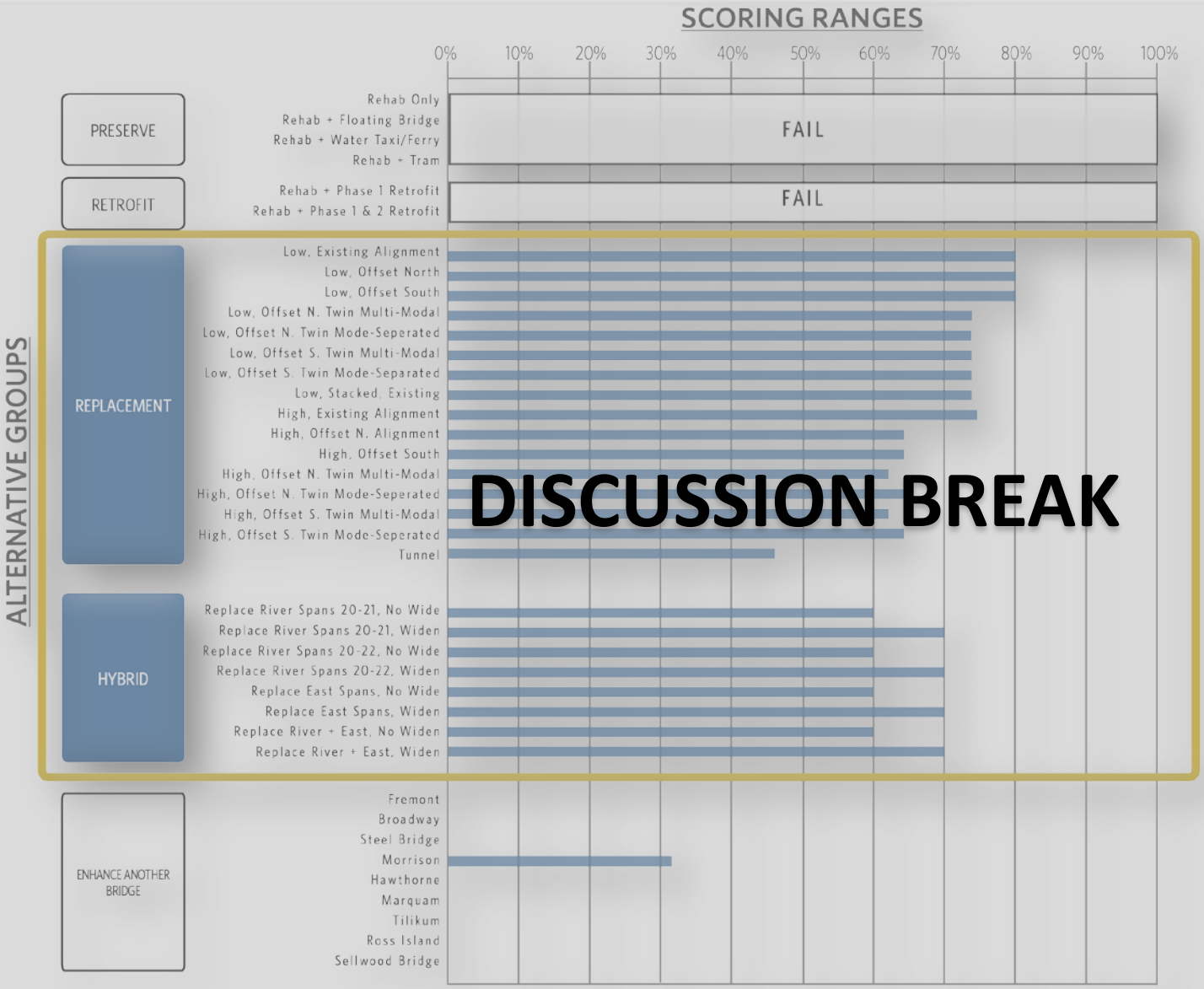



**Results:**

**Of the 5 groups of alternative types, 3 groups were eliminated through the screening process**

# 3. Screening Results

## Key Findings and Recommendations




**Results:**

Of the 5 groups of alternative types, 3 groups were eliminated through the screening process

# 4. Alternatives Evaluation

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## Guiding Principles

- Measurable at the level of design and information that will be available in this step
- Help differentiate alternatives
- Reflect input received to date
- Narrow range of crossing options to be carried forward into an environmental impact statement

# 4. Alternatives Evaluation

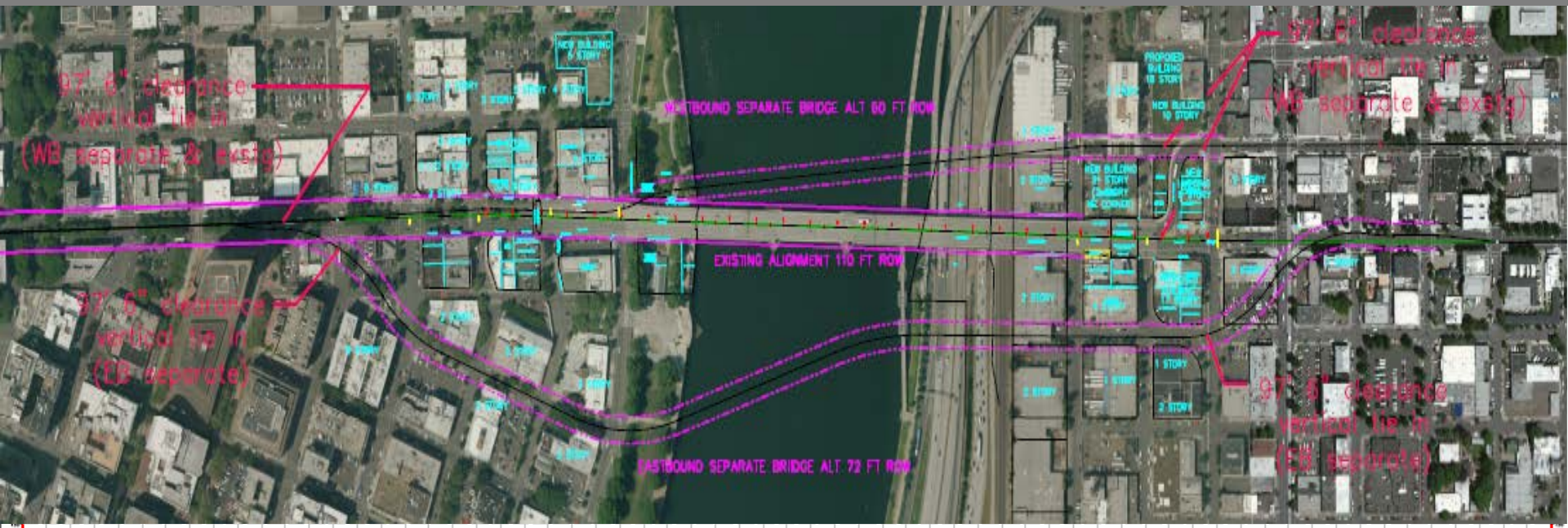
## Potential Criteria Topics



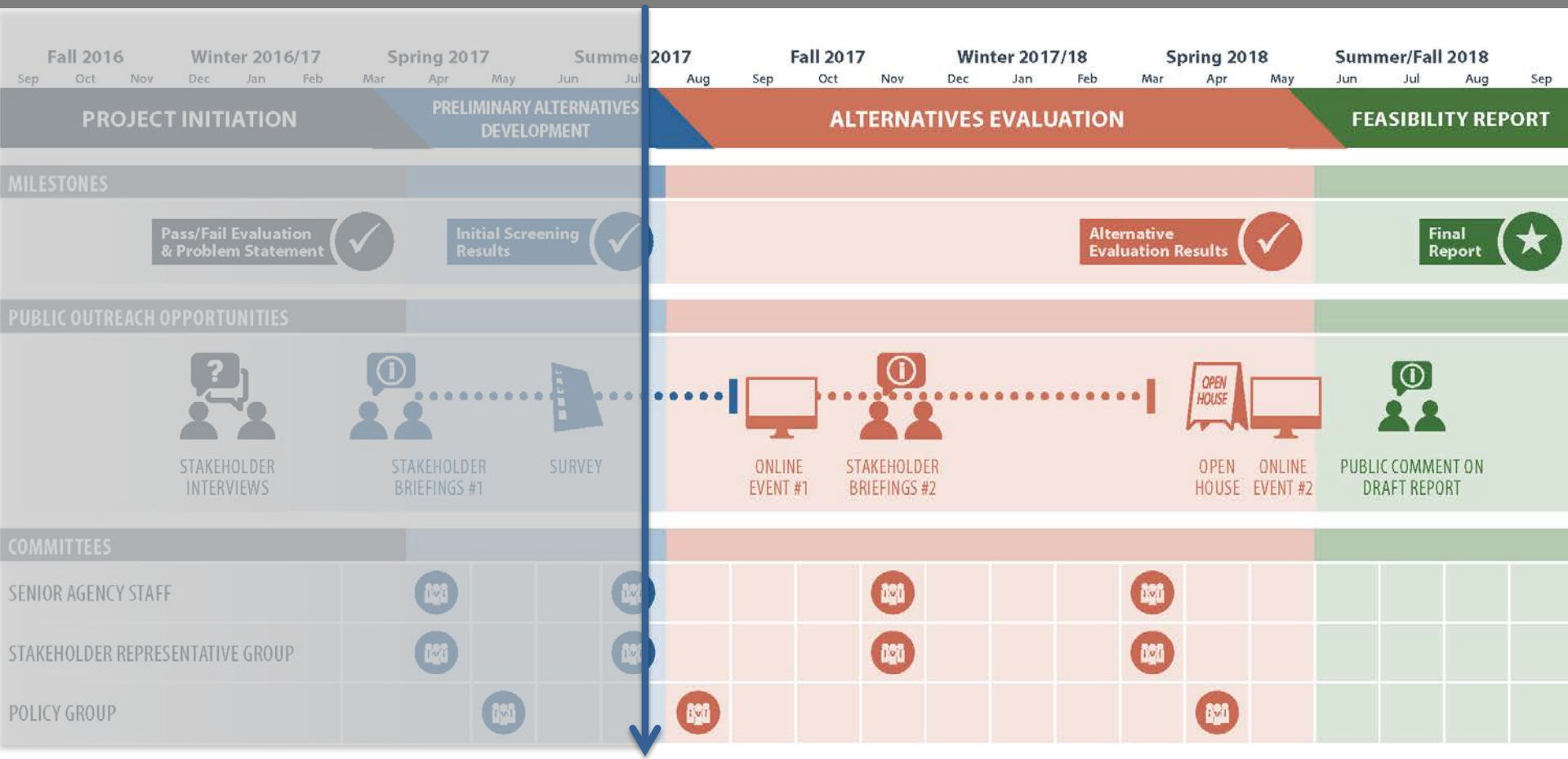
| | | | | |
|---|---|---|---|---|
| **Equity and Diversity** | | | | **Bike/Ped/ADA Access** |
| **Social Resources** (neighborhoods, social services, etc.) | **Recreation** | **Land Use and Economic Development** | **Historic/Cultural** | **Natural Environment** |
| **Right-of-Way** | **Facility Use** (HazMat, emergency equipment, vessels, heavy haul, etc) | **Construction** | **Seismic Performance** | **Transit Access and Connectivity** |
| **Traffic Congestion** | **Sustainability** | **Cost** | **Permitting Requirements** | **Others?** |

# 4. Alternatives Evaluation

## Concepts Development – Example




# 5. Schedule Review




We are here

# 6. Closing Remarks

EARTHQUAKE READY BURNSIDE BRIDGE

Thank You